
Cincinnati Municipal-Lunken Airport
FAR Part 150 Noise Compatibility Program
Volume I – Noise Exposure Maps

May 17, 2004

The City of Cincinnati

PB Aviation
A division of Parsons Brinckerhoff, Quade & Douglas, Inc.
312 Elm Street, Suite 2500
Cincinnati, OH 45202
(513) 639-2100

Statement of Certification and Public Notification

In accordance with Federal Aviation Regulations Part 150, these maps and accompanying documentation are submitted as the Existing and Future Baseline Noise Exposure Maps for Cincinnati Municipal-Lunken Airport. To the best of my knowledge and belief, these maps were prepared with the best available information and on the basis of reasonable assumptions, are hereby certified as true, complete, and representative of future aircraft noise levels.

I also hereby certify that interested persons have been afforded adequate opportunity to submit their views, data, and comments concerning the Noise Exposure Maps and the accompanying description of aircraft operations. A copy of all written comments received during development of the maps is included in this document.

Date

VOLUME I - TABLE OF CONTENTS

	Page
1.0 Introduction.....	1-1
1.1 Airport Settings and Facilities	1-1
1.2 Existing Noise Compatibility Program.....	1-2
1.3 The FAR Part 150 Study.....	1-4
1.3.1 Study Approach	1-4
1.3.2 Study Goals and Objectives	1-5
1.3.3 Consultation and Public Involvement.....	1-7
1.3.4 FAR Part 150 Study Report.....	1-8
2.0 Aircraft Noise Levels	2-1
2.1 Measurement of Sound	2-1
2.1.1 Amplitude	2-1
2.1.2 Frequency.....	2-1
2.1.3 Duration	2-2
2.2 Measurement of Noise	2-2
2.2.1 Sound Exposure Level (SEL)	2-4
2.2.2 Equivalent Sound Level (L _{eq})	2-4
2.2.3 Day-Night Average Sound Levels (DNL)	2-7
2.3 Noise Modeling.....	2-7
2.3.1 INM Input	2-8
2.3.2 INM Output.....	2-9
2.4 Community Response to Noise.....	2-10
2.4.1 Annoyance	2-11
2.4.2 Sleep/Speech Interference.....	2-11
2.4.3 Health.....	2-16
3.0 Land Use and Community Characteristics	3-1
3.1 Existing Land Use.....	3-1
3.1.1 Agriculture	3-5
3.1.2 Commercial.....	3-5
3.1.3 Industrial	3-5
3.1.4 Parks, Recreational and Institutional	3-5
3.1.5 Residential.....	3-6
3.1.6 Unclassified/Undeveloped	3-6
3.1.7 Community Facilities.....	3-6
3.1.8 Zoning	3-7
3.1.9 Planned Land Use	3-12
3.1.10 Fairfax, Ohio	3-12
3.1.11 Ft. Thomas, Kentucky	3-14
3.1.12 Highland Heights, Kentucky.....	3-14
3.1.13 Dayton, Kentucky	3-15

4.0	Existing Noise Exposure Map	4-1
4.1	Existing Noise Abatement Procedures.....	4-1
4.1.1	Arrivals	4-2
4.1.2	Departures	4-3
4.2	Aircraft Activity.....	4-3
4.2.1	Operational Levels.....	4-8
4.2.2	Fleet Mix	4-9
4.2.3	Stage Length	4-9
4.2.4	Day-Night Operations.....	4-11
4.2.5	Run-Up Operations	4-12
4.3	Operational Procedures	4-13
4.3.1	Runway Utilization	4-13
4.3.2	Flight Tracks	4-15
4.4	Existing Noise Contours	4-22
4.4.1	Noise Monitoring Data	4-23
4.4.2	Area.....	4-25
4.4.3	Housing and Population Impacts	4-28
4.4.4	Potentially Incompatible Land Uses	4-30
5.0	Future Baseline Noise Exposure Map	5-1
5.1	Aircraft Activity.....	5-1
5.1.1	Operational Levels	5-1
5.1.2	Fleet Mix	5-2
5.1.3	Stage Length	5-4
5.1.4	Day/Night Operations	5-4
5.1.5	Run-Up Operations	5-5
5.2	Operational Procedures	5-6
5.2.1	Runway Utilization	5-6
5.2.2	Flight Tracks	5-8
5.2.3	Flight Tracks Utilization	5-12
5.3	Future Baseline Noise Contours	5-15
5.3.1	Area.....	5-17
5.3.2	Housing and Population Impacts	5-17
5.3.3	Potentially Incompatible Land Uses	5-18
6.0	Coordination and Public Involvement.....	6-1
6.1	Planning Advisory Committee.....	6-1
6.2	Public Information Workshop.....	6-3
6.3	Study Newsletter	6-5
6.4	Interviews.....	6-5

APPENDICES

	Page
Appendix A	Glossary of Terms.....A-1
Appendix B	Planning Advisory Committee Members.....B-1
Appendix B1	Planning Advisory Committee Meeting Minutes/Sign-in-Sheets.....B1-1
Appendix B1a	Planning Advisory Committee Meeting Minutes #1/Sign-in-Sheets.....B1a-1
Appendix B1b	Planning Advisory Committee Meeting Minutes #2/Sign-in-Sheets.....B1b-1
Appendix B1c	Planning Advisory Committee Meeting Minutes #3/Sign-in-Sheets.....B1c-1
Appendix B1d	Planning Advisory Committee Meeting Minutes #4/Sign-in-Sheets.....B1d-1
Appendix B1e	Planning Advisory Committee Meeting Minutes #5/Sign-in-Sheets.....B1e-1
Appendix B1f	Planning Advisory Committee Meeting Minutes #6/Sign-in-Sheets.....B1f-1
Appendix B1g	Planning Advisory Committee Meeting Minutes #7/Sign-in-Sheets.....B1g-1
Appendix B2	Letters to Planning Advisory Committee MembersB2-1
Appendix B2a	Letters to Planning Advisory Committee Members #1B2a-1
Appendix B2b	Letter to Planning Advisory Committee Members #2B2b-1
Appendix B2c	Letters to Planning Advisory Committee Members #3B2c-1
Appendix B2d	Letters to Planning Advisory Committee Members #4B2d-1
Appendix B2e	Letters to Planning Advisory Committee Members #5B2e-1
Appendix B2f	Letters to Planning Advisory Committee Members #6B2f-1
Appendix B2g	Letters to Planning Advisory Committee Members #7B2g-1
Appendix B3	Planning Advisory Committee Members CommentsB3-1
Appendix C	Comments Received From Community Residents Public Workshop #1C-1
Appendix C1	Responses to Community Comments Public Workshop #1C1-1
Appendix C2	Public Workshop #1 Sign-in-Sheet.....C2-1
Appendix D	Comments Received from Community Residents Public Workshop #2D-1
Appendix D1	Responses To Community Comments Public Workshop #2D1-1
Appendix D2	Public Workshop #2 Sign-in-SheetsD2-1
Appendix E	Comments Received from Community Residents Public Workshop #3E-1
Appendix E1	Responses to Community Comments Public Workshop #3E1-1
Appendix E2	Public Workshop #3 Sign-in-SheetsE2-1
Appendix F	Lunken Part 150 Aircraft Activity Forecast.....F-1
Appendix G	Lunken Part 150 Noise Monitoring ReportG-1
Appendix H	Newspaper ClippingsH-1
Appendix I	Public NoticesI-1
Appendix J	Public HearingJ-1
Appendix K	NewsletterK-1
Appendix L	Lead-in-Lighting Systems.....L-1
Appendix M	Examples of “Chartered VFR Approach Corridors”M-1
Appendix N	Comments Received After the City of Cincinnati Community Development Education and Intergovernmental Affairs Committee (2003-2005).....N-1

LIST OF TABLES

	Page
2.4.1 Permissible Noise Exposure	2-17
3.1-1 Land Use Compatibility With Yearly Day-Night Average Sound Levels	3-3
3.1-2 Community Facilities In the Study Area	3-9
4.2-1 Aircraft Category and Typical Aircraft Types.....	4-8
4.2-2 Annual and Daily Aircraft Operations.....	4-9
4.2-3 Aircraft Fleet Mix	4-10
4.2-4 Stage Length Percentage.....	4-11
4.2-5 Day/Night Operations	4-12
4.2-6 Maintenance/Run-Up Operations	4-13
4.3-1 Annual Average Arrival Runway Utilization Daytime	4-14
4.3-2 Annual Average Arrival Runway Utilization Nighttime	4-14
4.3-3 Annual Average Departure Runway Utilization Daytime	4-14
4.3-4 Annual Average Departure Runway Utilization Nighttime.....	4-15
4.3-5 Annual Average Arrival Flight Track Use Daytime.....	4-19
4.3-6 Annual Average Arrival Flight Track Use Nighttime	4-20
4.3-7 Annual Average Departure Flight Track Use Daytime	4-21
4.3-8 Annual Average Departure Flight Track Use Nighttime	4-22
4.4-1 Noise Monitoring Summary	4-25
4.4-2 Observed Aircraft Operations and Noise Levels	4-26
4.4-3 Area Within the Existing (2002) Noise Contours (Square Miles and Acreage).....	4-28
4.4-4 Existing 2002 Noise Impacts to Housing and Population	4-29
5.1-1 Future (2007) Annual and Daily Aircraft Operations.....	5-2
5.1-2 Future (2007) Aircraft Fleet Mix	5-3
5.1-3 Future (2007) Stage Length Percentage.....	5-4
5.1-4 Future (2007) Day/Night Operations	5-5
5.1-5 Maintenance Run-Up Operations	5-6
5.2-1 Future (2007) Annual Average Arrival Runway Utilization Daytime	5-6
5.2-2 Future (2007) Annual Average Arrival Runway Utilization Nighttime	5-7
5.2-3 Future (2007) Annual Average Departure Runway Utilization Daytime	5-7
5.2-4 Future (2007) Annual Average Departure Runway Utilization Nighttime	5-7
5.2-5 Future (2007) Annual Average Arrival Flight Track Use Daytime.....	5-12
5.2-6 Future (2007) Annual Average Arrival Flight Track Use Nighttime	5-13
5.2-7 Future (2007) Annual Average Departure Flight Track Use Daytime	5-14
5.2-8 Future (2007) Annual Average Departure Flight Track Use Nighttime.....	5-15
5.3-1 Area Within The Future (2007) Noise Contours (Square Miles and Acreage)	5-17
5.3-2 Future (2007) Noise Impacts To Housing and Population	5-19

LIST OF EXHIBITS

	Page
2.1-1 Common Sounds and Their dBA	2-3
2.2-1 Sound Exposure Level Concept.....	2-5
2.2-2 Neighborhood Sound Levels.....	2-6
2.4-1 Comparative Effects of Noise For Residential Areas	2-12
2.4-2 Sleep Interference Versus Maximum A-Weighted Sound Levels.....	2-14
2.4-3 Speech Interference Levels	2-15
3.1-1 Jurisdictional Boundaries.....	3-2
3.1-2 Existing Land Use Plan.....	3-4
3.1-3 Community Facilities Map	3-8
3.1-4 Zoning Map.....	3-13
4.1-1 Lunken Existing Noise Abatement Arrivals Procedures	4-4
4.1-2 Lunken Existing Noise Abatement Departure Procedures	4-5
4.1-3 Lunken Existing Noise Abatement Touch and Go Operations.....	4-6
4.1-4 Lunken Existing Noise Abatement Touch and Go Operations.....	4-7
4.3-1 Departure Tracks.....	4-16
4.3-2 Arrival Tracks	4-17
4.3-3 Touch and Go Tracks.....	4-18
4.4-1 Noise Contours In 2002	4-24
5.2-1 Future Departure Tracks	5-9
5.2-2 Future Arrival Tracks.....	5-10
5.2-3 Future Touch and Go Tracks	5-11
5.3-1 Future Noise Contours In 2007	5-16